Self Diagnosis Supported model

SERVICE MANUAL

AE-6B CHASSIS

MODEL	COMMANDER	DEST	CHASSIS NO.	MODEL	COMMANDER	DEST	CHASSIS NO.
KV-32FQ70B	RM-938	FR	SCC-Q83N-A	KV-32FQ70K	RM-938	OIRT	SCC-Q82J-A
KV-32FQ70E	RM-938	ESP	SCC-Q81Q-A	KV-32FQ70U	RM-938	UK	SCC-Q84N-A

FD Trinitron

KV-32FQ70

RM-938

TRINITRON ® COLOR TV

SONY®

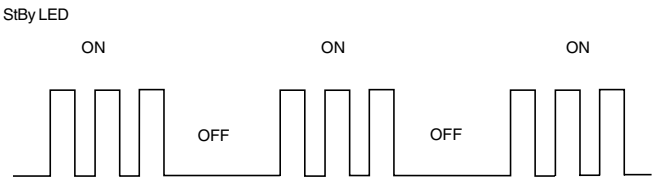
AE-6B SELF DIAGNOSTIC SOFTWARE

The identification of errors within the AE-6B chassis is triggered in one of two ways :- 1: Busy or 2: Device failure to respond to IIC. In the event of one of these situations arising the software will first try to release the bus if busy (Failure to do so will report with a continuous flashing LED) and then communicate with each device in turn to establish if a device is faulty. If a device is found to be faulty the relevant device number will be displayed through the LED (Series of flashes which must be counted) See table 1, non fatal errors are reported using this method.
Each time the software detects an error it is stored within the NVM. See Table 2.

Table 1

Error Message	LED Code
No error	00
Reserved	01
OCP (Over Current Protection)	02
Over Voltage Protection	03
No Vertical Sync	04
IKR Error at power on	05
IIC bus clock and/or data lines low at power on	06
NVM no IIC bus acknowledge at power on	07
Horizontal Protection	08
Tuner no acknowledge at power on	09
Sound Processor Error	10
Reserved	11
Scanrate Error	12
DAC Error	13
Backend Error	14
Dynamic Convergence Error	15
PIP Error	16

Flash Timing Example : e.g. error number 3



How to enter into Table 2

1. Turn on the main power switch of the TV set.
2. Program Remote Commander for Operation in Service Mode. [See Page 22].
3. Press 'VIDEO' 'VIDEO' > 'MENU' on the Remote Commander.
4. Using the Remote Commander, Scroll to the 'Error Menu' item using the down arrow key, then press the right arrow key.
5. The following table will be displayed indicating the error count.

Table 2

ERROR MENU			
E02	OCP	(0, 255)	0
E03	OVP	(0, 255)	0
E04	VSYNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	HPROT	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	-	(0, 255)	0
E12	SCANRATE	(0, 255)	0
E13	DAC	(0, 255)	0
E14	BACKEND	(0, 255)	0
E15	DYN CON	(0, 255)	0
E16	PIP	(0, 255)	0
WORKING TIME			
HOURS			14
MINUTES			7

Note: To clear the error count data press '80' on the Remote commander.

SECTION 4 CIRCUIT ADJUSTMENTS

4-1. Electrical Adjustments

Service adjustments to this model can be performed using the supplied remote Commander RM-938.

Programming the Remote Commander for Operation in Service Mode

1. Press the VCR/TV/DVD button until the TV LED lights.
2. Press and hold the yellow button for approx. 5 seconds until the TV LED flashes quickly.
3. Press 99999. All three LED's should light.
   The remote commander is now set to Service Mode.
4. To return the remote commander to normal operation mode repeat steps 1. and 2. then press 00000. All three LED's should light.
   The remote commander is now set to normal mode.

Setting the TV into Service Mode

1. Program the remote commander for operation in Service Mode as described above.
2. Turn on the TV main power switch.
3. Press the video standby button on the remote commander twice.
   'TT __' will appear in the upper right corner of the screen.
   Other status information will also be displayed.
4. Press 'MENU' on the remote commander to obtain the following menu on the screen.

```
Geometry
Panorama
Service
Scanrate
DAC
PiP
Sound
IF adjust
Error Menu

AE6B Wide v2.21 (Jan 2002)
Factory data 02h  16h
MSP Device : MSP3411G
```

5. Move to the corresponding adjustment item using the up or down arrow buttons on the Remote Commander.
6. Press the right arrow button to enter into the required menu item.
7. Press the 'Menu' button on the Remote Commander to quit the Service Mode when all adjustments have been completed.

Note :

- After carrying out the service adjustments, to prevent the customer accessing the 'Service Menu' switch the TV set OFF and then ON.

GEOMETRY

ABL TH	(0, 3)	0
ABL MODE	(0, 3)	0
P ABL	(0, 15)	15
V SIZE	(0, 63)	35
V POSITION	(0, 63)	33
V COMP	(0, 3)	1
V LIN	(0, 15)	7
S CORRECTION	(0, 15)	7
H SIZE	(0, 63)	44
PIN AMP	(0, 63)	32
UP CORNERPIN	(0, 63)	29
M PIN	(0, 3)	2
LO CORNERPIN	(0, 63)	29
TRAPEZIUM	(0, 15)	2
H POSITION	(0, 63)	40
AFC BOW	(0, 15)	8
AFC ANGLE	(0, 15)	9
LEFT BLK	(0, 63)	34
RIGHT BLK	(0, 63)	17
V ASPECT	(0, 63)	47
AKBTIM1	(0, 3)	2
AKBTIM2	(0, 1)	0
IKR		*1*
HNG		*0*
VNG		*0*

PANORAMA

HORWIDTH H	(0, 7)	1
HORWIDTH L	(0, 255)	170
HORPOS H	(0, 7)	0
HORPOS L	(0, 255)	15
NAPPLIP H	(0, 7)	1
NAPPLIP L	(0, 127)	62
HSCPOSC H	(0, 15)	8
HSCPOSC L	(0, 255)	151
BLANDEL	(0, 255)	13
BLANLEN	(0, 255)	207
BLANPOL	(0, 1)	0
HSEG1 H	(0, 7)	0
HSEG1 L	(0, 255)	96
HSEG2 H	(0, 7)	0
HSEG2 L	(0, 255)	192
HSEG3 H	(0, 7)	0
HSEG3 L	(0, 255)	224
HSEG4 H	(0, 7)	1
HSEG4 L	(0, 255)	64
HINCO H	(0, 1)	0
HINCO L	(0, 255)	40
HINC1 H	(0, 1)	0
HINC1 L	(0, 255)	20
HINC2 H	(0, 1)	0
HINC2 L	(0, 255)	0
HINC3 H	(0, 1)	1
HINC3 L	(0, 255)	236
HINC4 H	(0, 1)	1
HINC4 L	(0, 255)	216

IF ADJUST	
Automute	1
Audio Gain	0
L Gating	0

SERVICE		
SUB COL	(0, 63)	Adj
SUB HUE	(0, 63)	31
SUB SHARP	(0, 63)	30
SUB BRIGHT	(0, 63)	13
SUB CONT	(0, 15)	12
R-DRIVE	(0, 63)	50
G-DRIVE	(0, 63)	Adj
B-DRIVE	(0, 63)	Adj
R CUTOFF	(0, 63)	28
G CUTOFF	(0, 63)	24
B CUTOFF	(0, 63)	46
Br TXT	(0, 15)	7
Br OSD	(0, 15)	10

DAC		
CONFIG	*00000000*	
MPIN CONT	(0, 255)	96
HLIN	(0, 255)	83
HTRAP	(0, 255)	127
ROT. COIL	(0, 255)	130
PHOCUS PH	(0, 255)	90

SOUND		
M-N	(0, 511)	200
M-D	(-128, -1)	-20
M-S	(+0, +127)	+20
S-M	(+0, +127)	+10
D-M	(-128, -1)	-10
N-M	(0, 1023)	496
BBE	(+0, +68)	+28
B1	(-96, +96)	+0
B2	(-96, +96)	+0
B3	(-96, +96)	+0
B4	(-96, +96)	+0
B5	(-96, +96)	+0
SW L	(-128, +0)	+0
SW F	(+5, +40)	+30
NICAM C AD	10001	
NICAM Error	(0, 2047)	0
Stereo	(-128, +127)	+0
Status	0000000110	

ERROR MENU			
E02	OCP	(0, 255)	0
E03	OVP	(0, 255)	0
E04	VSYNC	(0, 255)	0
E05	IKR	(0, 255)	0
E06	IIC	(0, 255)	0
E07	NVM	(0, 255)	0
E08	HPROT	(0, 255)	0
E09	TUNER	(0, 255)	0
E10	SOUNDP	(0, 255)	0
E11	-	(0, 255)	0
E12	SCANRATE	(0, 255)	0
E13	DAC	(0, 255)	0
E14	BACKEND	(0, 255)	0
E15	DYN CON	(0, 255)	0
E16	PIP	(0, 255)	0
WORKING TIME			
HOURS			14
MINUTES			7

Sub Brightness Adjustment

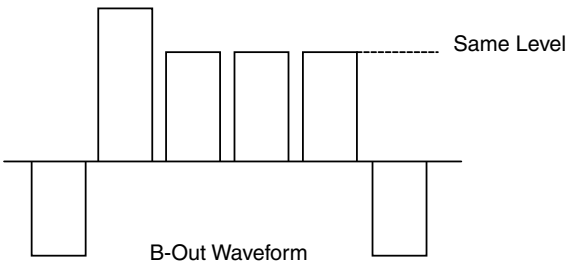
1. Input a Monoscope pattern.
2. Program the Remote Commander for operation in Service Mode. [See Page 22].
3. Press 'VIDEO' 'VIDEO' 13 on the Remote Commander.
4. Adjust the 'Sub-Brightness' data so that there is barely a difference between the 0 IRE and 10 IRE signal levels.

Sub Contrast Adjustment

1. Input a video signal that contains a small 100% white area on a black background.
2. Connect an digital voltmeter to Pin 10 of J7376 [C Board].
3. Program the Remote Commander for operation in Service Mode. [See Page 22].
4. Adjust the Sub-Contrast [Using 'VIDEO' 'VIDEO' '11'] to obtain a voltage of 105 +/- 5V.

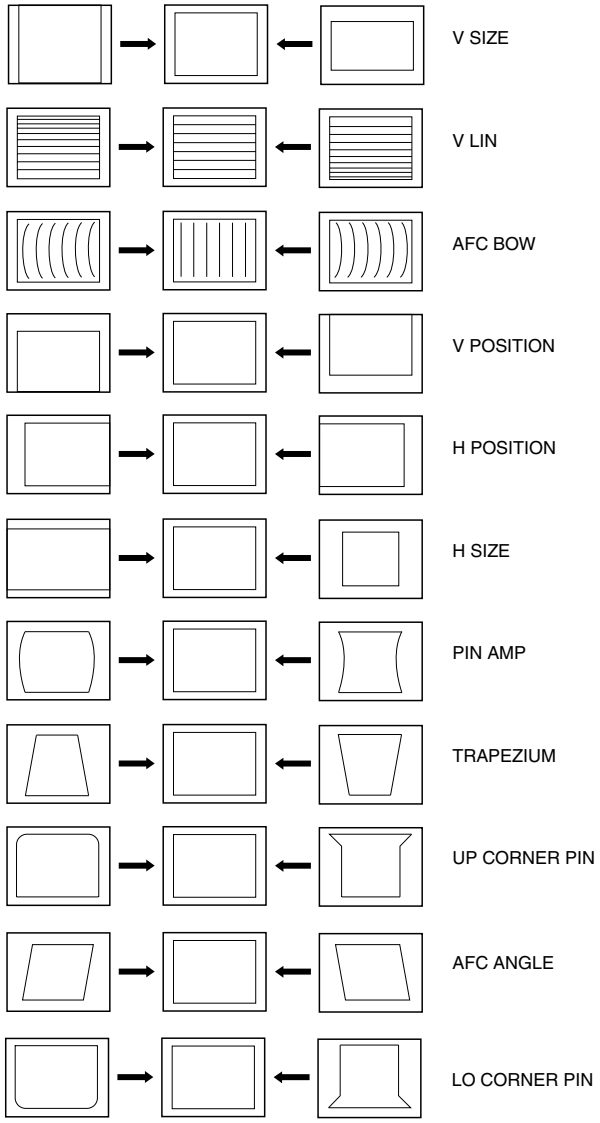
Sub Colour Adjustment

1. Receive a PAL colour bar signal.
2. Connect an oscilloscope to Pin 6 of CN7001 [A Board].
3. Program the Remote Commander for operation in Service Mode. [See Page 22].
4. Adjust the 'Sub Colour' [Using 'VIDEO' 'VIDEO' '12'] so that the Cyan, Magenta and Blue colour bars are of equal levels as indicated below.



Deflection System Adjustment

1. Program the Remote Commander for operation in Service Mode. [See Page 22] and enter into the 'Geometry' service menu.
2. Select and adjust each item in order to obtain the optimum image.

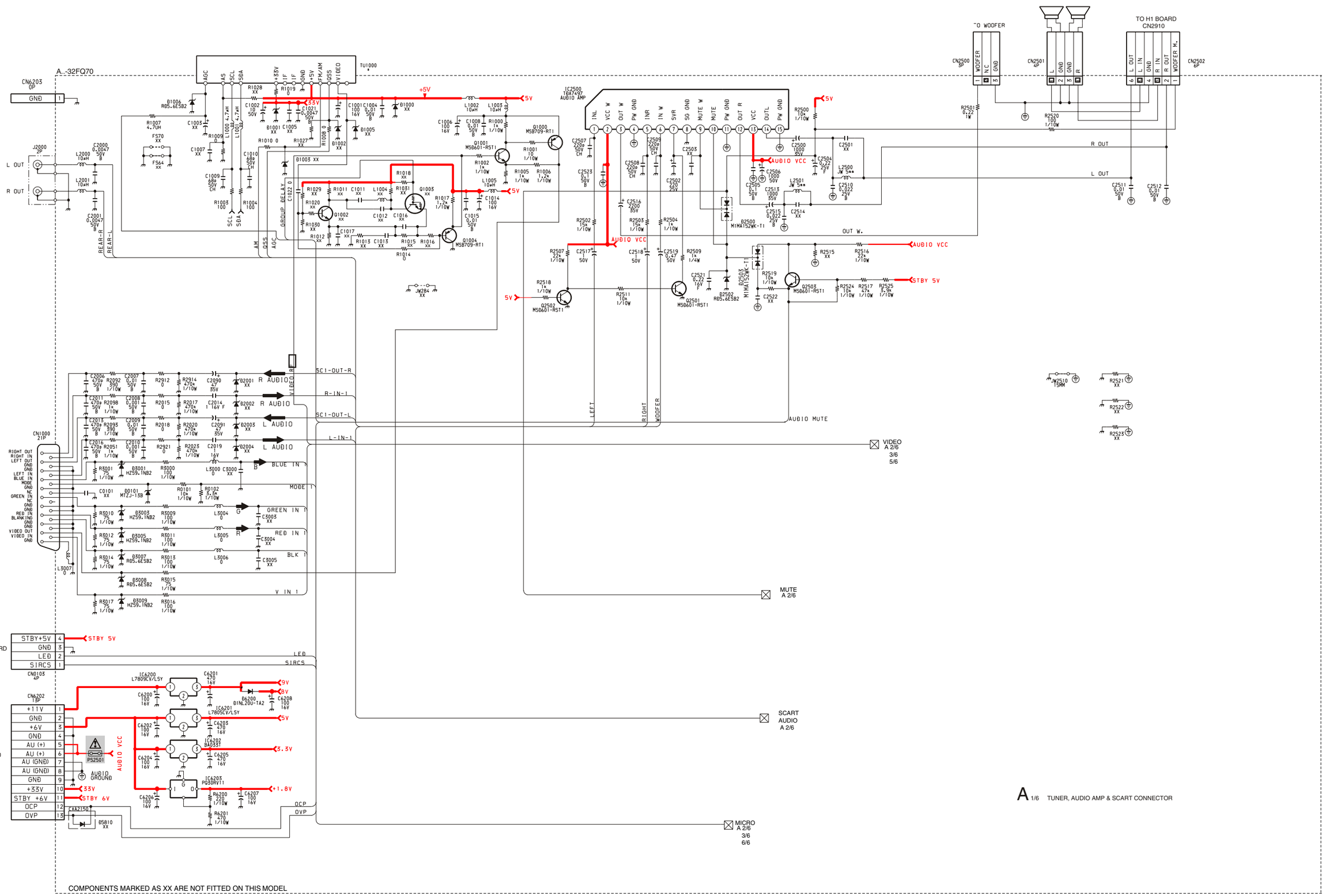


GEOMETRY		
ABL TH	(0, 3)	0
ABL MODE	(0, 3)	0
P ABL	(0, 15)	15
V SIZE	(0, 63)	35
V POSITION	(0, 63)	33
V COMP	(0, 3)	1
V LIN	(0, 15)	7
S CORRECTION	(0, 15)	7
H SIZE	(0, 63)	44
PIN AMP	(0, 63)	32
UP CORNERPIN	(0, 63)	29
M PIN	(0, 3)	2
LO CORNERPIN	(0, 63)	29
TRAPEZIUM	(0, 15)	2
H POSITION	(0, 63)	40
AFC BOW	(0, 15)	8
AFC ANGLE	(0, 15)	9
LEFT BLK	(0, 63)	34
RIGHT BLK	(0, 63)	17
V ASPECT	(0, 63)	47
AKBTIM1	(0, 3)	2
AKBTIM2	(0, 1)	0
IKR		*1*
HNG		*0*
VNG		*0*

4-2. TEST MODE 2:

Test Mode 2 is available by rogramming the Remote Commander for operation in Service Mode [As shown on Page 22] then pressing the 'VIDEO' button twice, OSD 'TT' appears. The functions described below are available by selecting the two numbers. To release the 'Test mode 2', press 00, 10, 20 ... or switch the TV set into Stand-by mode.

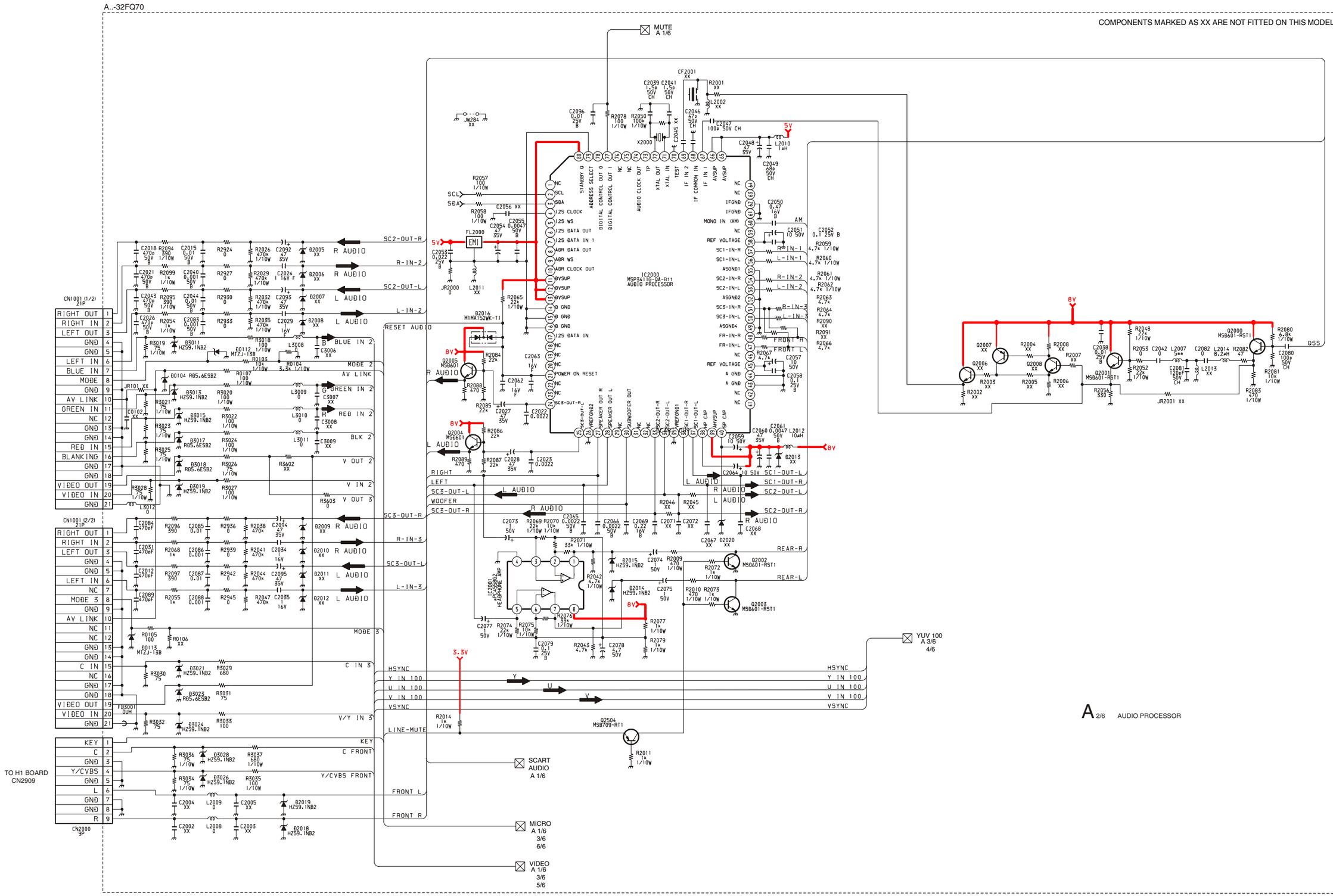
00	'TT' mode off
01	Picture maximum
02	Picture minimum
03	Set speaker/headphone Volume to 35%
04	Set speaker/headphone Volume to 50%
05	Set speaker/headphone Volume to 65%
06	Set speaker/headphone Volume to 80%
07	Ageing mode
08	Shipping Condition
11	Sub picture adjustment
12	Sub colour adjustment
13	Sub Brightness adjustment
14	Text H Position adjustment
15	Rotation Coil Test
16	Picture level 50%
19	Factory Mode Enable/Disable
21	Destination ADEKR
22	Destination BL
23	Destination ADEKR
24	Destination U
25	Destination ADEKR
26	Destination BL
27	Destination ADEKR
28	Destination ADEKR
31	Auto Shutoff Enable/Disable
36	Velocity Modulation (VM) OFF/ON test
41	Re-initialise NVM
43	Select Dual A sound
44	Select Dual B sound
45	Select Mono sound
46	Select Stereo sound
48	Set NVM as non virgin
49	Set NVM as virgin
53	FM Overmodulation Enable/Disable
55	Tuner selection (SONY/ALPS)
59	Select Model 3 Scarts + PIP or 2 Scarts
68	Enable/Disable X26 countermeasure (N problem)
73	Enable Zweiton D/K2 system (6.5/6.74)
74	Enable Zweiton D/K3 system (6.5/5.74)
78	Balance full right
79	Balance full left
87	Local keys test
99	Display Error and Working Time menu



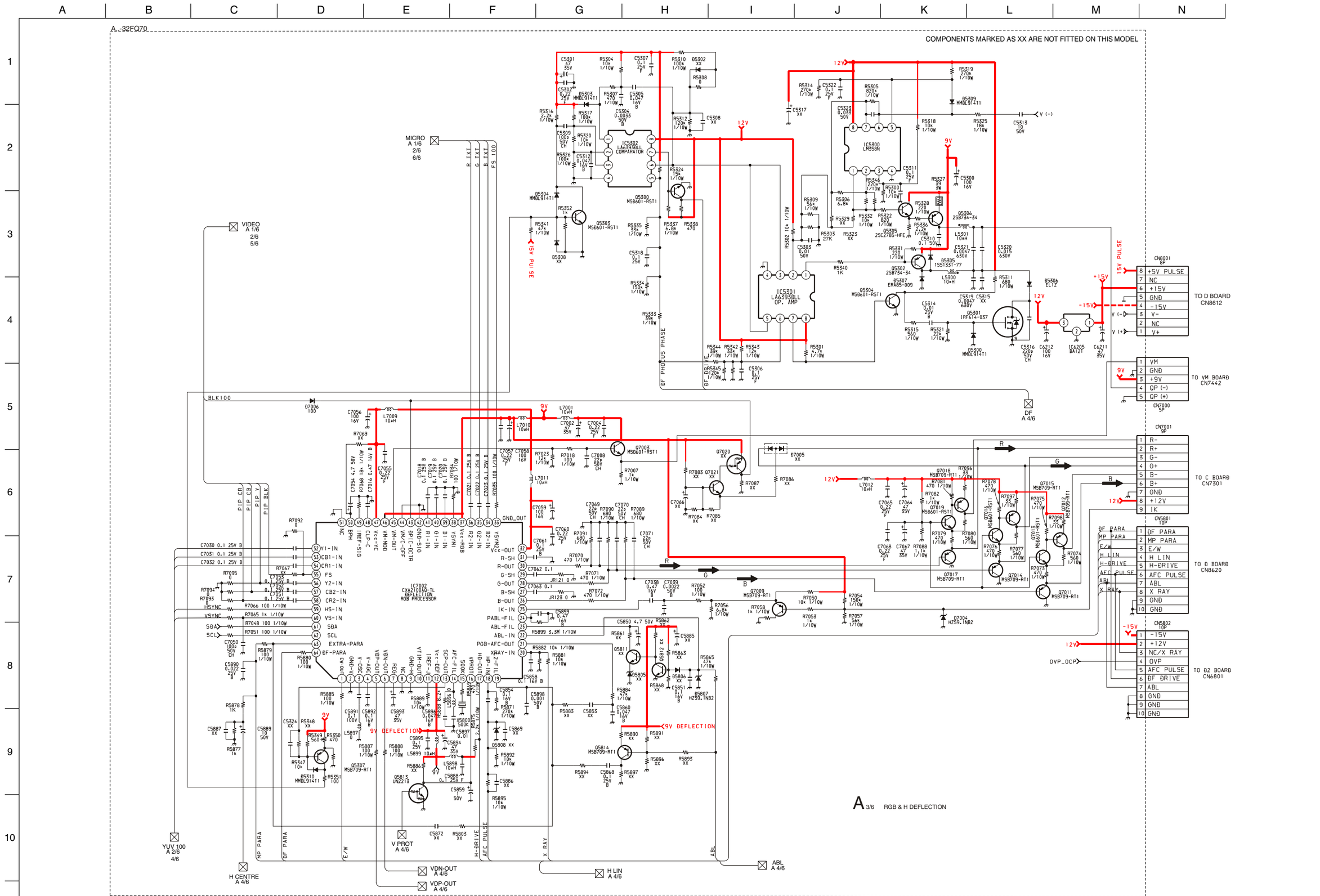
~ A Board Schematic Diagram [Tuner, Audio Amp & Scart Connector] Page 1/6 ~

A..-32FQ70

COMPONENTS MARKED AS XX ARE NOT FITTED ON THIS MODEL



~ A Board Schematic Diagram [Audio Processor] Page 2/6 ~



~ A Board Schematic Diagram [RGB & H Deflection] Page 3/6 ~

A..-32FQ70

COMPONENTS MARKED AS XX ARE NOT FITTED ON THIS MODEL

A 4/6 VERTICAL DEFLECTION & ROTATION COIL

H CENTRE A 3/6 · YUV 100 A 2/6 3/6 · VDP-OUT A 3/6 · VDN-OUT A 3/6 · VPROT A 3/6 · H LIN A 3/6 · ABL A 3/6 · DF A 3/6

H SYNC · ABL

IC5400 STV9379 V-OUT · TP1 · TP2 · JW5400 XX · JW5401 5MM · TH5400 XX · L5400 8.2mH · D5405 GP10BPK023 · D5404 RD15ES-B2 · Q5404 IRF620 · D5403 XX · D5406 MMBL914T1 · D5407 MMBL914T1 · Q5400 MTZJ-3.6A · Q5401 UN2213 V PROT · Q5402 MSB709-RT1 · Q5403 UN2213 · D5400 MIMA152WK-T1 · D5101 MIMA152WK-T1

IC5104 LA6500 OP.AMP · D5104 RD5.6ESB2 · Q5103 RD59ES-B

IC5103 CXA1875AM-T4 DAC · H CENTER · M PIN CONT · DF PHOCUS PHASE · ROT- · ROT+ · SCL · SDA

IC5200 · IC5201 · Q5200 XX · Q5201 XX · Q5202 XX · Q5203 XX · Q5204 XX · Q5205 XX · D5200 XX · D5201 XX · D5202 XX · Q5101 MSD601-RST1 · IC5102 CA0005AD · Q5100 MSB709-RT1

+12V · -15V · +9V · 9V · 12V · 5V

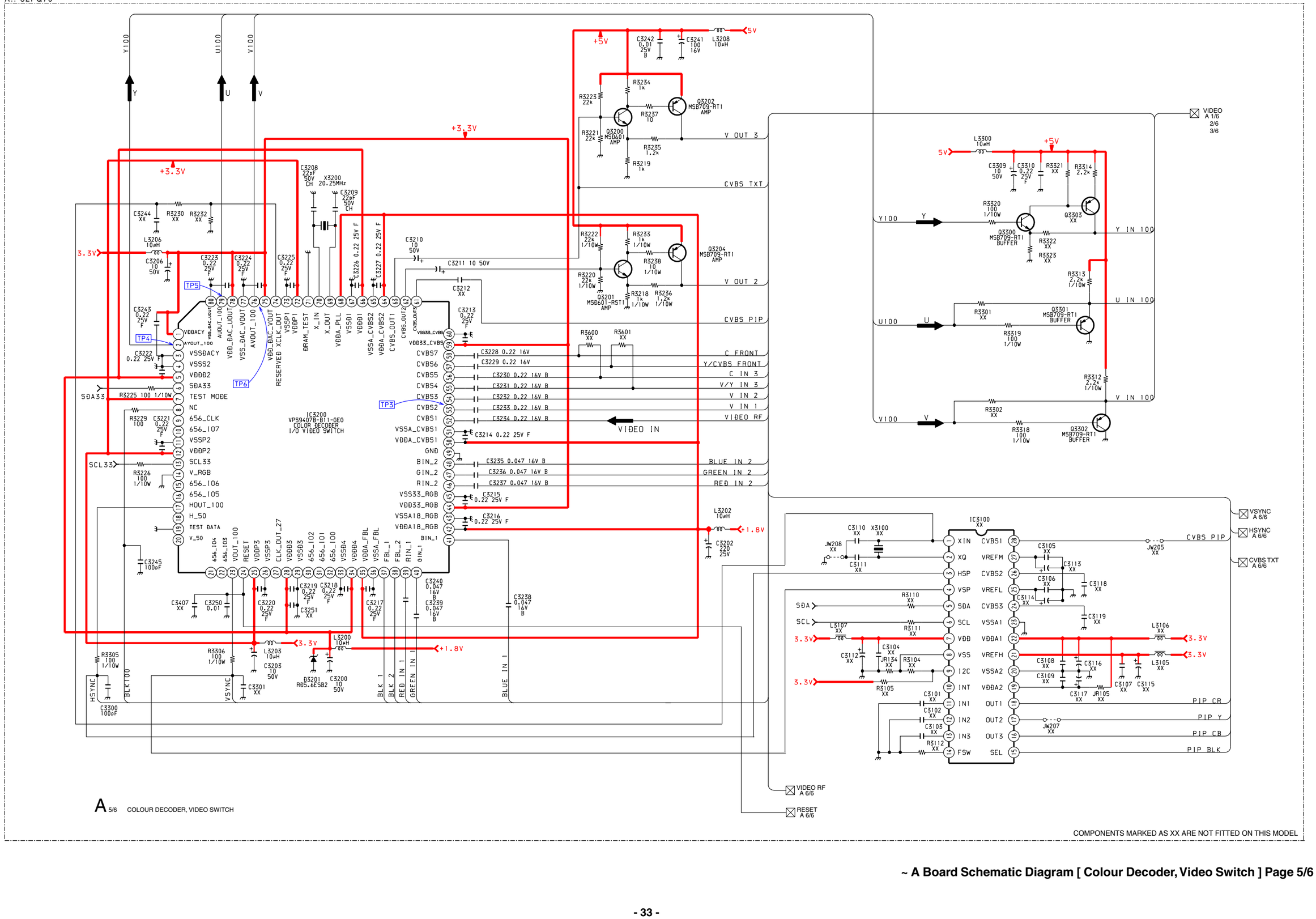
CN5100 3P
1 ROT-
2 NC
3 ROT+
TO ROT COIL

CN5200 XX
1 CY+
2 NCTO CY
3 CY-

CN5002 7P
1 V STAT
2 DF DRIVE
3 H CENTRE
4 M PIN CONT
5 +9V
6 GND
7 GND
TO B BOARD CN8810

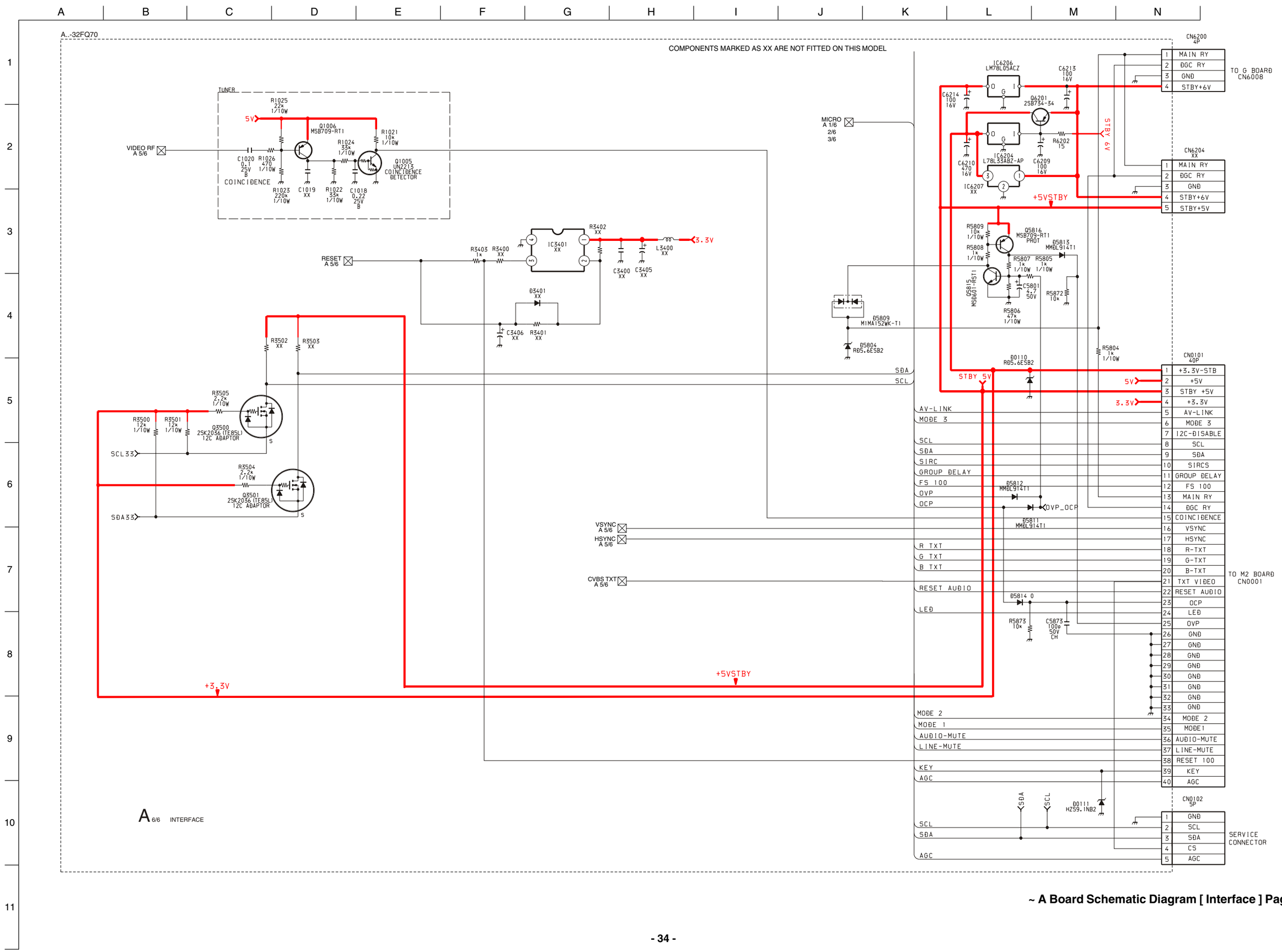
~ A Board Schematic Diagram [Vertical Deflection & Rotation Coil] Page 4/6 ~

A..-32FQ70



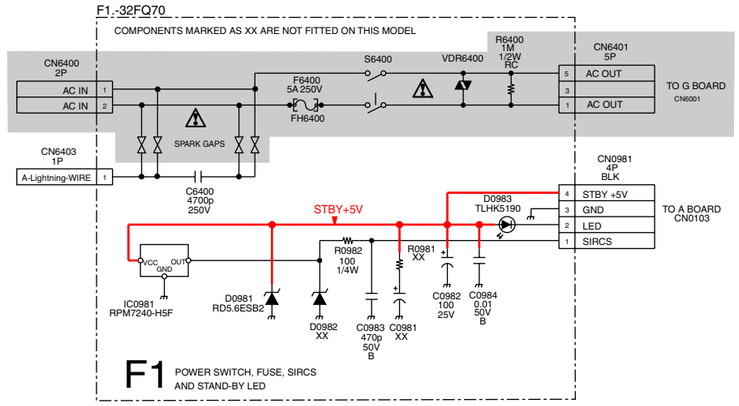
COMPONENTS MARKED AS XX ARE NOT FITTED ON THIS MODEL

~ A Board Schematic Diagram [Colour Decoder, Video Switch] Page 5/6 ~

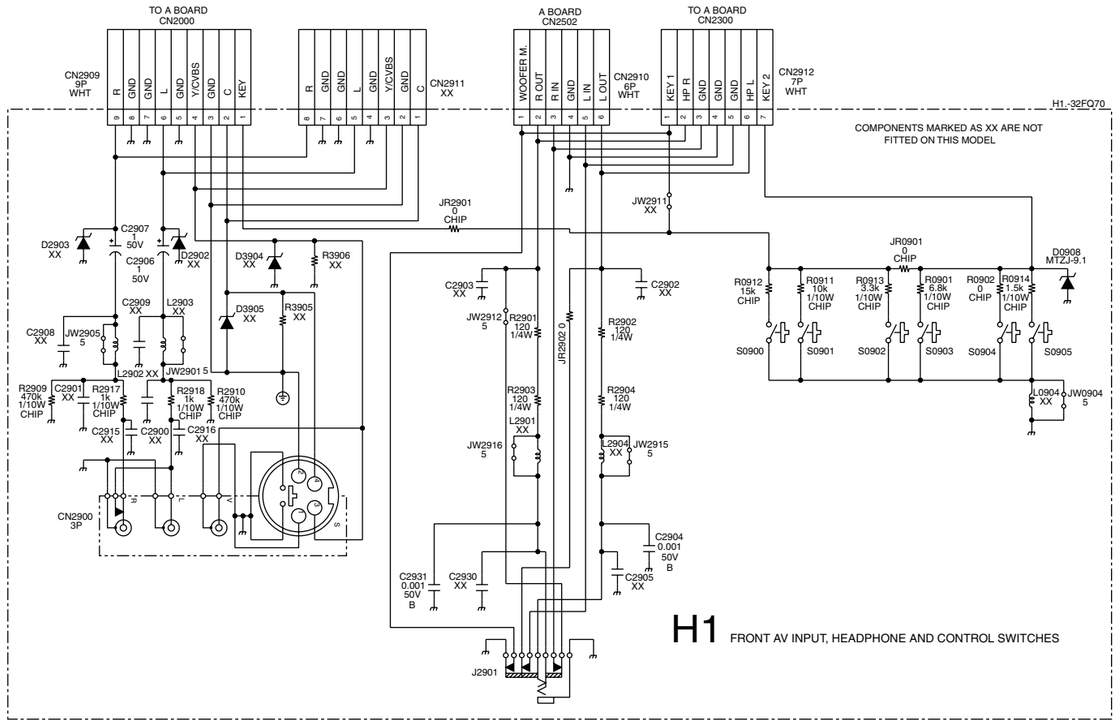


~ A Board Schematic Diagram [Interface] Page 6/6 ~

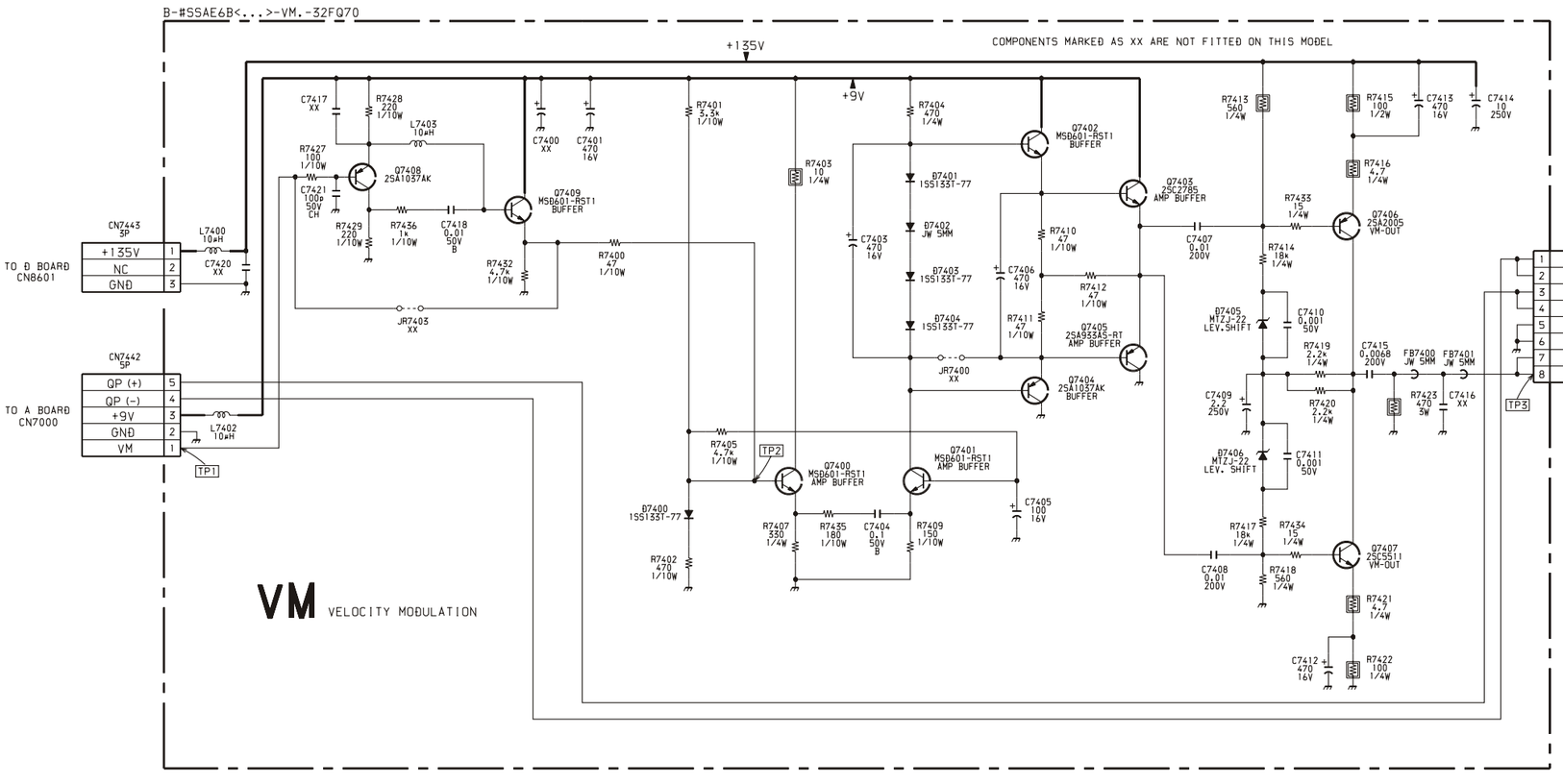
~ F1 Board Schematic Diagram [Power Switch, Fuse, SIRCS and Stand-By LED] ~



~ H1 Board Schematic Diagram [Front AV Input, Headphone and Control Switches] ~



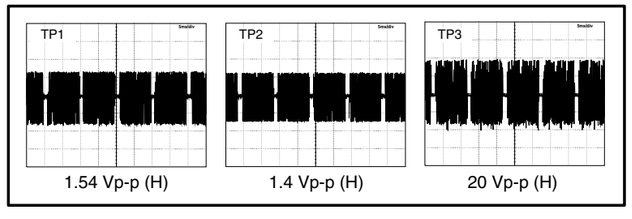
~ VM Board Schematic Diagram [Velocity Modulation] ~

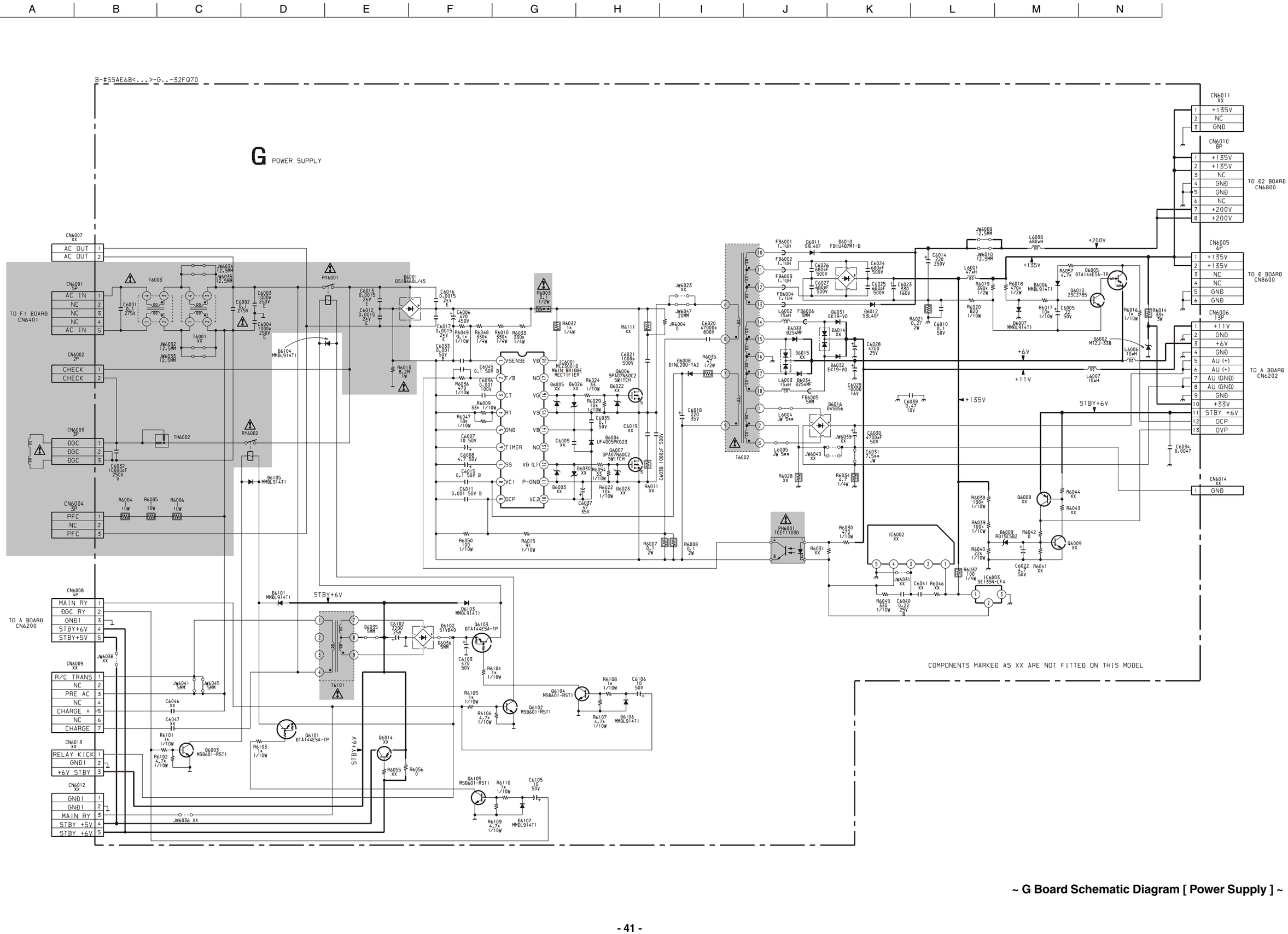


~ VM Board Voltage Table ~

Ref	(e)(s)	(b)(g)	(c)(d)
Q7400	5.0	5.7	8.7
Q7401	0.9	1.5	4.1
Q7402	5.5	6.1	8.9
Q7403	5.1	5.5	8.9
Q7404	4.7	4.1	0
Q7405	5.1	4.7	0
Q7406	134	133.8	68
Q7407	1.1	1.4	68
Q7408	6.3	5.6	2.5
Q7409	5.7	6.3	0.9

~ VM Board Waveforms ~





~ G Board Schematic Diagram [Power Supply] ~

C..-32FQ70

C R,G,B OUT

TO A BOARD CN7001

CN7301 9P BLK: R- 1, R+ 2, G- 3, G+ 4, B- 5, B+ 6, GND 7, +12V 8, IK 9

TP1 TP2 TP3 TP4

JR7301 0

R7375 33k 1/0W
R7376 10k 1/0W
R7377 12k 1/0W
D7375 1SS133T-77
D7376 1SS133T-77
R7300 1k 1/4W
R7325 1k 1/4W

R7390 1k 1/4W
C7383 XX
R7391 1.8k CHIP
R7392 680
C7384 6PF
C7307 XX
R7309 1.8k 1/10W CHIP
R7310 680 1/10W CHIP
C7308 6PF CH 50V

R7394 1k 1/4W
R7398 1k 1/4W

IC7300 TDA6111Q/N4 RED-VIDEO-OUT RED.OUT
VB/vb 12v vVI GND IK 200V VF VO VOF

D7300 1SS119-25T
R7393 1.5k 1/10W CHIP
C7385 8PF 50V CH
C7310 47p 50V
C7309 0.1 50V
C7302 XX
C7305 0.047 630V
R7305 68k 2W RS
C7304 400V
D7303 XX
C7306 0.001 25V
R7381 10k 1/10W CHIP
C7303 4PF 50V CH
R7303 1.8k 1/10W CHIP

+12V

R7304 470 1/2W RC
R7306 5MM
L7300 XX
C7380 22UF 350V

FV FOCUS
external
RV7375 110M
J7376
D7379 RD5.6ESB2
D7378 RD5.6ESB2
R7387 47 1/2W RC
R7382 100 1/2W RC
C7377 XX
TP5 TP6 TP7
R7383 1W RS
R7384 XX
L7376
R7385 100 1/2W RC
C7378 680p 2kV B
C7379 0.0047 2kV E
R7388 20MM

CN7333 TAB (CONTACT) TO FBT

CN7300 5P
1 +200V
2 NC
3 GND
4 NC
5 HEATER
TO D BOARD CN8614

CN7311 TAB (CONTACT) 1
TO COATTING EARTH

R7389 120K 1/4W

V901 W76LLZ060X PICTURE TUBE
KG KB G2 H HV CV KR G1 G4
TO D2 BOARD HV (T6800)
TO COATING EARTH

IC7325 TDA6111Q/N4 GREEN-VIDEO-OUT
VB 12V VI GND IK 200V VF VO VOF

R7334 680
C7331 4PF
R7335 1.8k 1/10W CHIP
C7332 XX
R7395 1.8k 1/10W CHIP
C7386 XX
R7396 680
C7387 6PF
R7364 1.8k 1/10W CHIP
C7357 XX
R7363 680
C7358 4PF
Q7352 UN2213

C7389 XX
R7399 1.8k 1/10W CHIP
R7374 680
C7390 6PF

C7388 8PF 50V CH
R7397 1.5k 1/10W CHIP
R7380 10k 1/10W CHIP
C7330 0.047 630V
D7325 1SS119-25T
C7333 0.1 50V
C7328 XX
R7328 1.8k 1/10W CHIP
C7325 4PF 50V CH
C7329 1 400V
D7327 XX
R7327 5MM
R7330 68k 2W RS
C7326 0.001 @ 25V
R7329 470 1/2W
L7325 XX
R7331 5MM

+200V
L7375 1UH

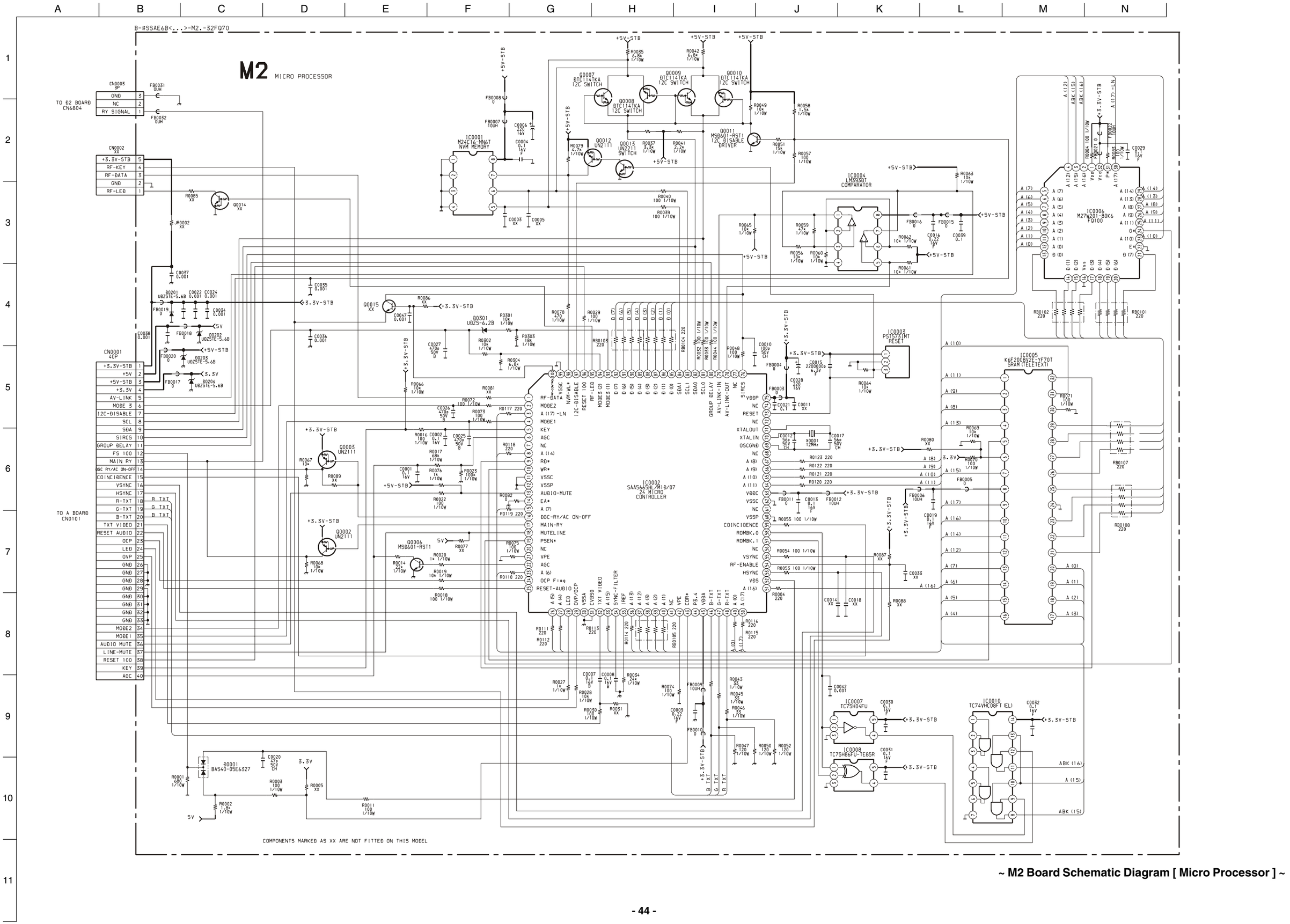
IC7350 TDA6111Q/N4 BLUE-VIDEO-OUT
VB 12V VI E IK 200V VF VO VOF

C7391 8PF 50V CH
R7373 1.5k 1/10W CHIP
R7379 10k 1/10W CHIP
C7356 0.047 630V
R7355 5MM
R7358 68k 2W RS
C7360 47p 50V
C7352 0.001 @ 25V
D7350 1SS119-25T
C7354 47 35V
C7359 0.1 25V
D7353 XX
C7355 1 400V
R7356 1.8k 1/10W CHIP
C7351 4PF CH 50V
R7357 470 1/2W
L7350 XX
R7360 5MM

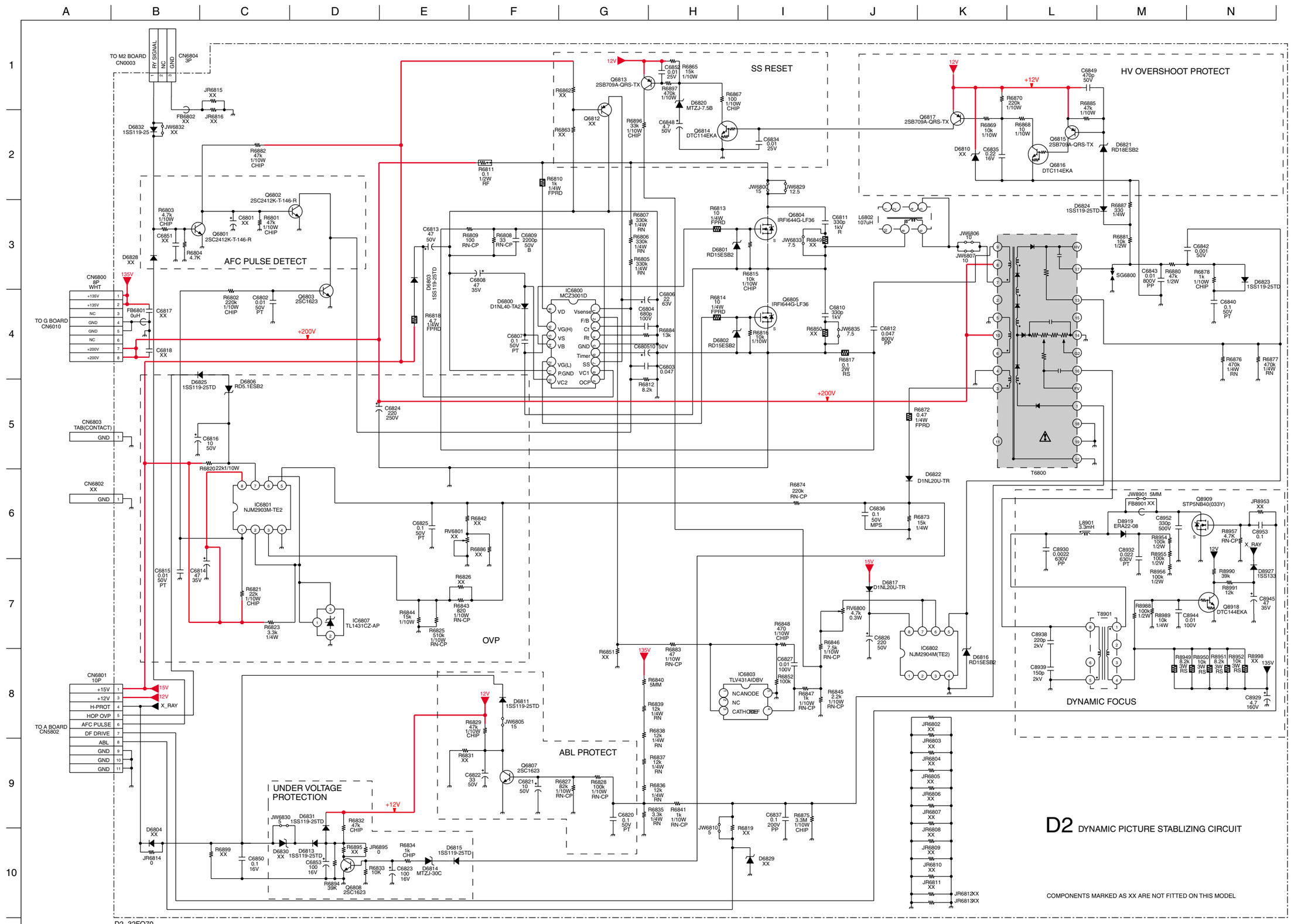
Q7353 UN2213
R7350 1k 1/4W
L7378 1uH
Q7354 DTA144EK
Q7350 DTA144EK
C7350 22 63V

COMPONENTS MARKED AS XX ARE NOT FITTED ON THIS MODEL

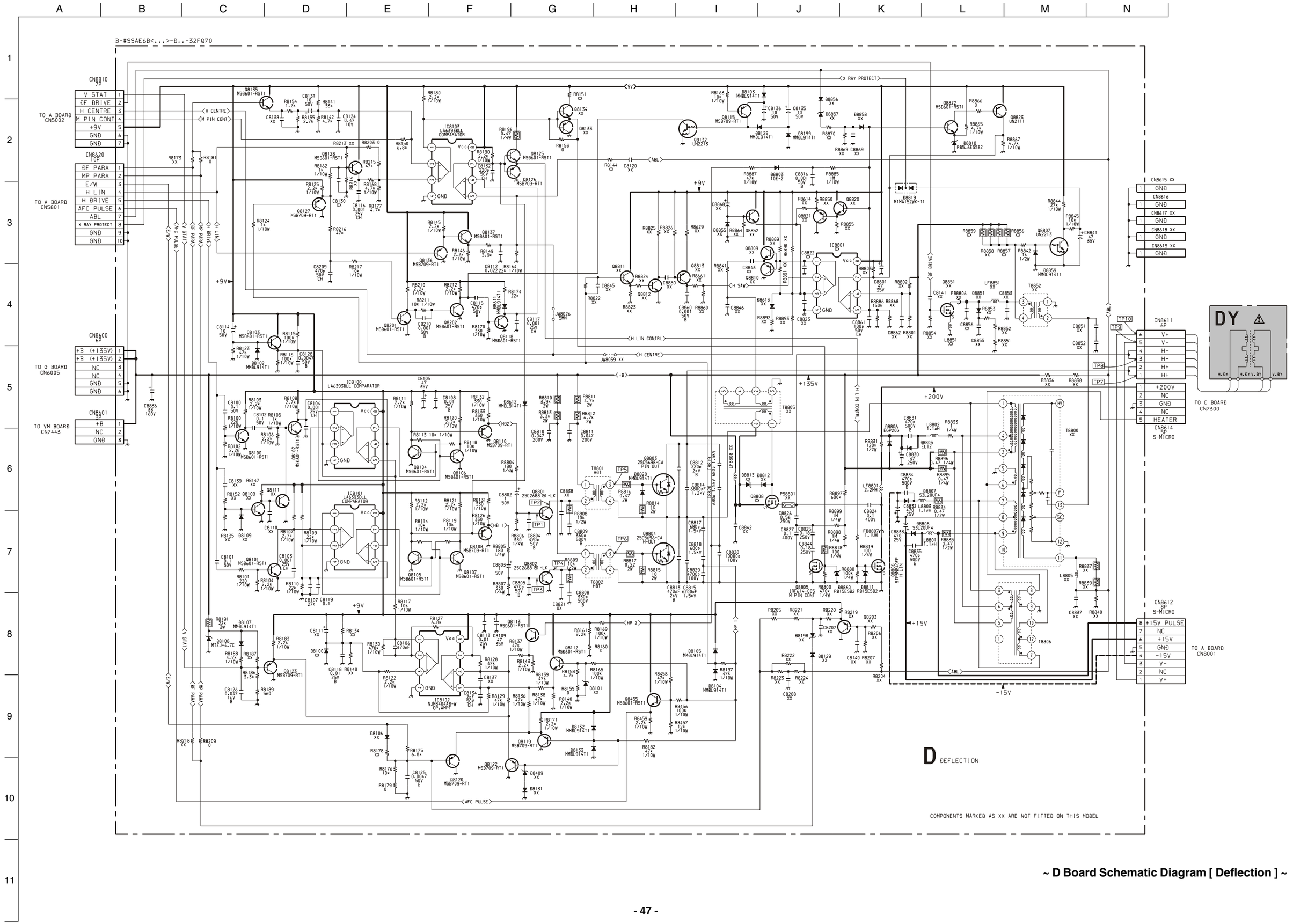
~ C Board Schematic Diagram [R-G-B Out] ~



~ M2 Board Schematic Diagram [Micro Processor] ~



~ D2 Board Schematic Diagram [Dynamic Picture Stabilising Circuit] ~



~ D Board Schematic Diagram [Deflection] ~